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10 SOUTH WACKER DRIVE, SUITE 3000  
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TO: Patent and Trademark Office  
Appeal Brief-Patents

FROM: Rebecca P. Rokos

OFFICIAL

COMPANY: USPTO

DATE: July 9, 2004

FAX NO.: (703) 872-9306

TOTAL NO. OF PAGES: 15

OUR REFERENCE NO.: 006401.00029

RE: In re U.S. Patent Application of Antrim et al.  
Application No. 09/614,961  
Filed: July 13, 2000  
For: REDUCED MALTO-OLIGOSACCHARIDES

OFFICIAL FAX

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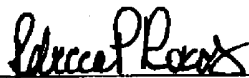
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<b>TRANSMITTAL FORM</b>  <i>(to be used for all correspondence after initial filing)</i>	<b>Application Number</b>	09/614,961
	<b>Filing Date</b>	July 13, 2000
	<b>First Named Inventor</b>	Antrim et al.
	<b>Group Art Unit</b>	1623
	<b>Examiner Name</b>	Howard Owens, Jr.
<b>Total Number of Pages in This Submission</b>	<b>Attorney Docket Number</b>	006401.00029

ENCLOSURES (check all that apply)		
<input checked="" type="checkbox"/> <b>Fee Transmittal Form</b>  <input type="checkbox"/> Fee Attached  <input type="checkbox"/> Amendment / Response  <input type="checkbox"/> After Final  <input type="checkbox"/> Affidavits/declaration(s)  <input checked="" type="checkbox"/> Extension of Time Request  <input type="checkbox"/> Express Abandonment Request  <input type="checkbox"/> Information Disclosure Statement  <input type="checkbox"/> Certified Copy of Priority Document(s)  <input type="checkbox"/> Response to Missing Parts/Incomplete Application  <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Assignment Papers (for an Application)  <input type="checkbox"/> Drawing(s)  <input type="checkbox"/> Licensing-related Papers  <input type="checkbox"/> Petition  <input type="checkbox"/> Petition to Convert to a Provisional Application  <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address  <input type="checkbox"/> Terminal Disclaimer  <input type="checkbox"/> Request for Refund  <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance Communication to Group  <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences  <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)  <input type="checkbox"/> Proprietary Information  <input type="checkbox"/> Status Letter  <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):  <b>Appeal brief, Fax cover sheet, Certificate of Facsimile transmission.</b>
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	Allen E. Hoover, Reg. No. 37,354
Signature	<i>Allen E. Hoover, No. 37,354</i>
Date	July 9, 2004

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**FEE TRANSMITTAL  
for FY 2004**

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27**TOTAL AMOUNT OF PAYMENT** (\$) 750**Complete if Known**

Application Number	09/614,961
Filing Date	July 13, 2000
First Named Inventor	Antrim et al.
Examiner Name	Howard Owens, Jr.
Art Unit	1623
Attorney Docket No.	006401.00029

**METHOD OF PAYMENT (check all that apply)**☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None☒ Deposit Account:Deposit  
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**FEE CALCULATION****1. BASIC FILING FEE**

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	285	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1)

(\$) 0

**2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE**

Total Claims	Extra Claims	Fee from below	Fee Paid
Independent Claims	0	0	0
Multiple Dependent	0	290	0

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1202	18	2202	9	Claims in excess of 20	
1201	86	2201	43	Independent claims in excess of 3	
1203	290	2203	145	Multiple dependent claim, if not paid	
1204	86	2204	43	** Reissue independent claims over original patent	
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent	

SUBTOTAL (2)

(\$) 0

\*\*or number previously paid, if greater; For Reissues, see above

**FEE CALCULATION (continued)****3. ADDITIONAL FEES**

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	420
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	330
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17 (q)	
1808	180	1808	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) \_\_\_\_\_

\*Reduced by Basic Filing Fee Paid

SUBTOTAL (3)

(\$) 750

**SUBMITTED BY**Name  
(Print/Type)

Allen E. Hoover

Registration No.  
(Attorney/Agent)

37,354

**Complete if applicable**

Telephone:

312-463-5000

Signature

Banner &amp; Witcoff, No. 42/104

Date

July 9, 2004

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JUL 09 2004

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of:

Antrim et al.

Serial 09/614,961

No.:

Filed: July 13, 2000

For: REDUCED MALTO-  
OLIGOSACCHARIDESAtty. Docket 06401.00029  
No.:

Group Art Unit: 1623

Examiner: Howard Owens,  
Jr.**OFFICIAL****APPEAL BRIEF**Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

This document constitutes the Appellants Brief on Appeal. The matters required by 37 CFR 1.192 are addressed in specific detail herein below.

**Real Party in Interest**

The real party in interest is Grain Processing Corporation, a corporation of Muscatine, Iowa. Grain Processing Corporation is the Assignee of the present application.

**Related Appeals in interferences**

None known.

**Status of Claims**

Claims 2-8, 10-14, 16-18, and 23-25 are pending in the present application. Claims 1, 9, 15, and 19-22 have been canceled. All of the pending claims stand as appealed.

**Status of Amendments**

No amendments were filed subsequent to final rejection.

#### Summary of Invention

As discussed, for instance, at page 4, line 28, a method for substantially reducing a mixture of a plurality of oligosaccharide species is provided. The species may differ at least in DP value (DP meaning degree of polymerization), thus defining a DP profile for the mixture. In the preferred embodiment of the invention, the method comprises the steps of providing the oligosaccharide mixture and catalytically hydrogenating the mixture under hydrogenation conditions suitable to substantially preserve the DP profile of the mixture.

Generally, the method of the invention comprises the step of catalytically hydrogenating the mixture under hydrogenation conditions suitable to substantially preserve the DP 1-8 profile of the mixture. The catalytic hydrogenation is performed at a pressure of at least about 1500 psi. In accordance with the invention as set forth in the three independent claims in this application, claims 23, 24, and 25, the plurality of malto-oligosaccharides comprises a maltodextrin. A maltodextrin, as is well known in the art, is a mixture of glucose and glucose oligomers in which the glucose oligomers are composed almost completely of  $\alpha$ -1, 4-linked glucose units. Moreover, a maltodextrin has a dextrose equivalent value (prior to hydrogenation) of less than 20. See page 2, lines 12-16.

The Examiner has already allowed U.S. Patent 6,613,898, the parent of the present application.

#### Issues

Did the Examiner err in maintaining the Section 103 rejection over Borden, especially after this same Examiner allowed the claims of U.S. Patent 6,613,898 over Borden?

Given Borden's teachings of aggressive reaction conditions which would be certain to degrade the DP profile of a maltodextrin, how can the Examiner possibly maintain a Section 103 rejection of the present claims, which specify reaction conditions that preserve DP profile?

#### Grouping of Claims

Applicants request that the claims be considered as a single group. Applicants by no means are conceding that the claims do not reflect separately patentable differences from claim to claim, but submit the claims as a single group for purposes of simplifying the issues before the Board. It is suggested that the Board considered claim 23 as the basis of the appeal.

#### Argument

Applicants have already been awarded U.S. Patent 6,613,898 on the parent of the present application. The present application is a continuation-in-part. This application specifies certain conditions for the catalytic hydrogenation of a malto-oligosaccharide that are not claimed specifically in the '898 patent, specifically, catalytic hydrogenation at a pressure of at least 1500 psi. Claim 1 of the '898 patent is set forth below, along with claim 23 of the present application.

1. A method for reducing a mixture of a plurality of malto-oligosaccharide species to a dextrose equivalent (DE) of essentially zero, each of said malto-oligosaccharide species having a non zero DE resulting from the presence of a reducing end group on said malto-oligosaccharide species, said plurality of malto-oligosaccharide species differing at least in degree of polymerization (DP) value thus defining a DP profile for said mixture, at least about 40% of said malto-oligosaccharides in said mixture having a DP value greater than 10, said plurality of malto-oligosaccharides comprising a maltodextrin, said method comprising the steps of: providing said malto-oligosaccharide mixture; and catalytically hydrogenating said mixture under hydrogenation condition suitable to substantially preserve the DP 1-8 profile of said mixture.

23. A method for reducing a mixture of a plurality of malto-oligosaccharide species to a dextrose equivalent (DE) of essentially zero, each of said malto-oligosaccharide species having a non zero DE resulting from the presence of a reducing end group on said malto-oligosaccharide species, said plurality of malto-oligosaccharide species differing at least in degree of polymerization (DP) value thus defining a DP profile for said mixture, at least about 40% of said malto-oligosaccharides in said mixture having a DP value greater than 10, said plurality of malto-oligosaccharides comprising a maltodextrin, said method comprising the steps of:

- providing said malto-oligosaccharide mixture; and
- catalytically hydrogenating said mixture under hydrogenation conditions suitable to substantially preserve the DP 1-8 profile of said mixture, said catalytic hydrogenation being preformed of at least 1500 psi.

The Examiner has apparently withdrawn his contention that the polydextrose of Borden is a malto-oligosaccharide (and indeed the Examiner is correct to have withdrawn this assertion). In the Final Office Action, the Examiner states:

Borden teaches processing of polymaltose (col. 2, line 3-10) which is an  $\alpha$ -1,4-linked polysaccharide, equivalent to the malto-oligosaccharides claimed by applicant.

Applicants respectfully disagree. In the present application, only maltodextrins are claimed. As has been previously established, maltodextrins are essentially linear  $\alpha$ -1,4-linked glucose oligomers, although maltodextrins do contain a small amount of  $\alpha$ -1,6-linked glucose units (up to about 3%).

In contrast the Borden reference characterizes polymaltose as a "highly branched" material. Further details concerning the polymaltose of Borden are found at column 2, line 33 *et seq.* Polymaltose is said to be a heat-polymerized glucose oligomer. Borden further teaches that "some of the thus-formed polydextrose or polymaltose polymer chains are terminated by reducing glucose groups while others may be terminated by polyol."



Simply put, the "highly branched" polymaltose of Borden is not a maltodextrin. Maltodextrins have a very small percentage of branch points, whereas polymaltose is "highly branched." Maltodextrin contains no polyol terminal group (until hydrogenated in accordance with the teachings of the invention), whereas Borden teaches that "polymaltose" is sometimes terminated with a polyol group.

Borden does recognize the desirability of hydrogenation of a polydextrose and a polymaltose product to reduce color. Indeed, the hydrogenation of sugars to sugar alcohols has long been known as a method for increasing stability of the sugar. Borden fails altogether to teach or suggest a maltodextrin, however, nor does Borden teach or suggest the preservation of the DP profile of a maltodextrin. Indeed, Borden teaches that all reducing glucose groups should be hydrogenated:

Alternatively and preferably it is believed that substantially all of the reducing glucose groups are reduced (i.e. converted) to sorbitol groups.

As the Examiner recognized earlier in examining the parent '898 patent, such reaction conditions sufficient to reduce substantially all of the terminal glucose groups would be expected to degrade and alter the DP profile of the starting material. Borden thus teaches away from the reaction conditions claimed in this application. Examiner Owens himself has already recognized all of the foregoing in connection with the examination of the '898 parent patent. During the prosecution of that patent, the Borden reference was cited, but this rejection was overcome once the applicants were able to demonstrate the failure of Borden to teach or suggest as maltodextrin, and the failure of Borden to teach or suggest reaction conditions that would be expected to substantially preserve the DP 1-8 profile of a maltodextrin during hydrogenation.

The Examiner's allowance of the '898 patent (now presumed valid) is inconsistent with his actions in this application. The Examiner does not comment on this inconsistency in the final rejection, nor in the subsequent Advisory Action. Nonetheless, the Office has already deemed claim 1 of the '898 patent to be patentable over Borden. It

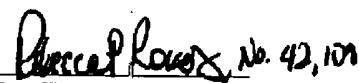
should likewise be the case that the amended claims of the present application are patentable over Borden.

In short, Borden does not teach or suggest a maltodextrin. Borden teaches away from hydrogenation conditions that would be expected to substantially preserve the DP 1-8 profile of a maltodextrin during hydrogenation. The Office has already ruled on this question in favor of the applicants. Applicants see no basis by which the rejection can be maintained, and accordingly the rejection should be reversed.

Appendix

A listing of the claims on appeal is presented in an appendix hereto.

Respectfully submitted,

  
Allen E. Hoover  
Reg. No. 37,354

Banner & Witcoff, Ltd.  
10 S. Wacker Drive  
Suite 3000  
Chicago, Illinois 60606  
Phone: 312-463-5000  
Fax: 312-463-5001